

STAT100 Problem Set 8
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1a.

```
> table1 <- table(BodyFatPercentage$Activity)
> table1

    high    low medium 
    10     6    76 
> percent = 100*table1/sum(table1)
> percent

      high      low    medium 
10.869565  6.521739 82.608696 
> # Erik Ter-Gabrielyan
```

1b.

$H_a : p > .775$

1c.

Is a random sample

$np \geq 10$

$92(0.775) \geq 10$ yes

$n(1-p) \geq 10$

$92(0.225) \geq 10$ yes

All conditions are met

1d.

$(\hat{p} - p_0) / \sqrt{(p_0(1-p_0))/n}$

$.826 - .775 / \sqrt{(.775(.225))/92}$

$0.051 / 0.043536$

1.171

1e.

p-value = 0.1203

1f.

Since the p-value is greater than the significance of 0.05, we fail to reject the null hypothesis. There is not sufficient evidence that significantly more than 77.5% of all adolescent women have a medium activity level.

1g.

```
> prop.test(76,92,0.775,alternative="greater",conf.level=0.95,correct=FALSE)
```

1-sample proportions test without continuity correction

```
data: 76 out of 92, null probability 0.775
X-squared = 1.377, df = 1, p-value = 0.1203
alternative hypothesis: true p is greater than 0.775
95 percent confidence interval:
 0.7520329 1.0000000
sample estimates:
              p
0.826087
```

```
> # Erik Ter-Gabrielyan
```

2a.

```
> # Erik Ter-Gabrielyan
> mean(BodyFatPercentage$Pct_Fat)
[1] 26.96196
> sd(BodyFatPercentage$Pct_Fat)
[1] 7.142888
> length(BodyFatPercentage$Pct_Fat)
[1] 92
```

2b.

$H_a : u < 21.5$

2c.

Sample is random

$n > 30$

92 > 30 yes

2d.

$(X - u_0) / (s/\sqrt{n})$

$Z = 2.43671069275$

$Z = 2.44$

